STATE OF IOWA

DEPARTMENT OF COMMERCE

UTILITIES BOARD

IN RE: EFFICIENT USE OF TELEPHONE NUMBERING RESOURCES	DOCKET NO. NOI-00-3

ORDER INITIATING INQUIRY

(Issued October 11, 2000)

INTRODUCTION AND SUMMARY

With this order, the Utilities Board (Board) initiates an informal proceeding to gather information through a series of written questions and answers and informal workshops conducted by Board staff, culminating in one or more staff reports describing the costs and benefits of various measures that will promote the more efficient use of telephone numbering resources. They should identify the efficiency measures that can be implemented on reasonable terms and conditions so that the Board can concentrate its resources, and the resources of the Iowa telephone industry, where they will produce the best results.

BACKGROUND

The Board has recent experience with area code relief proceedings (see Docket Nos. SPU-99-22 and SPU-99-30, relating to the 515 and 319 area codes, respectively) in which the Board must implement either an area code split or an

overlay to create a supply of new central office codes, or NXXs, for assignment to local exchange carriers, wireless companies, paging companies, and other entities that use telephone numbers. Area code relief of any form results in significant costs for telephone companies and their customers costs that could be avoided if the demand for new telephone numbers, and particularly for new central office codes, could be reduced.

Based upon public comment received in the area code relief dockets, it appears to be the popular perception that new telephone system uses (such as cell phones, fax machines, and second lines for computers) drive area code relief proceedings. However, a significant part of the problem is caused by the manner in which telephone numbers are assigned to telephone companies and similar entities. Because of the nature of the existing telephone network, numbers are assigned to telephone companies in blocks of 10,000, even in exchanges where a far smaller supply would be adequate. Improving the efficiency of number assignment could substantially reduce the pressure on existing number resources.

There will be costs associated with changing the network to permit more efficient assignment of telephone number resources. The Board believes the industry will actively pursue numbering efficiency if the companies have some confidence that the changes are likely to be effective and competitively neutral and if they believe they will be permitted to recover their reasonable costs incurred in implementing the changes (to the extent those costs are outside the range of

normal business expenses). It is difficult, however, for the Board to provide assurances on either of these points without information that is not currently available to the Board. Accordingly, the Board will conduct this informal inquiry, managed by Board staff, to gather and analyze the necessary information.

The Board's authority in this area derives from two sources. First, the Board has authority to obtain from any public utility all necessary information to enable the Board to perform its duties, pursuant to Iowa Code § 476.2(4) (1999). This gives the Board sufficient authority to investigate the actions taken by these providers with respect to numbering issues and to determine whether those actions are consistent with every public utility's duty to furnish reasonably adequate service and facilities. See Iowa Code § 476.8.

Second, the Federal Communications Commission (FCC) has delegated certain authority to the Board relating to numbering resources. The FCC has consistently found that state regulatory authorities have inherent power to engage in rate center consolidation, without needing any delegated authority from the FCC[1]. In addition, the FCC recently issued a general order relating to numbering issues in which the FCC delegated to the states certain authority to investigate and implement various measures intended to improve the efficiency of number assignment[2]. Finally, on July 20, 2000, the Common Carrier Bureau of the FCC

[1] See, for example, In the Matter of Massachusetts Dept. of Telecommunications And Energy's Petition for Waiver, CC Docket No. 96-98, FCC 99-246, NSD File No. L-99-19 (September 15, 1999).

[2] Numbering Resource Optimization, CC Docket No. 99-200, "Report and Order," 15 FCC Rcd 7574 (2000).

issued an order giving Iowa express authority to conduct a state trial of thousands-block number pooling in the 515 area code[3].

ALTERNATIVE STEPS THAT MAY BE CONSIDERED

Several alternatives, variations, and related conservation measures will be considered in this docket for implementation in the near future, while others may be more appropriate for continued study. These alternatives include, but are not limited to, the following[4]:

- Thousands block number pooling
- Rate center consolidation
- Central office code sharing
- Individual telephone number pooling
- Unassigned number porting
- Elimination of reliance on ILEC rate centers

Each of these alternatives will be briefly described below.

1. Thousands block number pooling

Thousands block number pooling (TBNP) involves the allocation of sequential telephone numbers with the same NXX[5] to different service providers

[3] "Order," CC Docket Nos. 99-200 and 96-98, DA 00-1616 (Common Carrier Bureau, July 20, 2000).

[4] The Board acknowledges the efforts of the Colorado Telephone Numbering Task Force, and particularly its "Third Report To the Colorado Public Utilities Commission" (issued December 31, 1998), for much of the background information summarized herein.

[5] An "NXX" is the prefix, or the first three digits, of a seven-digit local telephone number. Because the first digit cannot be a "0" or "1," it is identified as an "N," while the other, unrestricted digits are identified by an "X." Thus, an unspecified local telephone number is sometimes described as "NXX-XXXX," with the NXX representing the central office code.

that serve customers within the same rate center. All ten thousand numbers within each NXX continue to be assigned to a single rate center, but they can be allocated among multiple service providers at the thousand-block (NXX-X) level. This methodology preserves two of the historical functions of the NXX (call rating and toll discrimination), but breaks the association of an entire NXX with a single service provider's switch. The switch identification is accomplished via an external data base query.

The architecture used to support TBNP is the IN/AIN (Intelligent Network/Advanced Intelligent Network) system used for local number portability (LNP). The existing LNP databases can contain specific routing information for blocks of numbers within a pooled NXX. Use of the existing LNP architecture avoids the need to perform 7-digit screening (NPA-NXX-X) within each switch on calls to pooled numbers.

The main advantage of TBNP is that it permits assignment of blocks of numbers that more closely match the requirements of many local exchange carriers; a carrier that needs only 400 numbers to serve a particular exchange no longer ties up an entire block of 10,000 numbers if there are other carriers serving that exchange that can use the other numbers. This should mean fewer stranded numbers, that is, numbers that are assigned to a single carrier in a particular exchange but are not likely to be used in the foreseeable future.

The disadvantages include the limited scope of TBNP, the costs associated with it, and the time required to implement it. The scope of TBNP is limited to LECs that have switches that are LNP-capable. Rural telephone companies and wireless carriers are not currently required to offer LNP. Moreover, even where LNP has been implemented, the thousands blocks are only available for use in the rate center to which they are assigned; with existing TBNP systems, thousands blocks cannot normally be moved from one exchange to another.

In terms of cost, it appears these may be significant, including the cost of hiring of a third-party administrator and purchasing and installing equipment and software to implement TBNP. If the Board decides to pursue a TBNP trial in the 515 NPA, the Board may have to establish a state mechanism for recovery of appropriate costs; when the national TBNP effort reaches Iowa, the 515 pool would be administered with the national system and any remaining costs would be recovered through a national charge that the FCC will set.

The timing of TBNP is another consideration. The Board understands that in Washington and Oregon, Qwest Corporation agreed to an implementation timeline of 221 days from the date of the order requiring TBNP, based on the results of a California TBNP trial. Assuming this timeline would also apply in Iowa, if the Board were to order TBNP for the 515 area code on January 1 of a given year, it is possible that TBNP could be in place by approximately mid-August. However, it is possible that the relatively large number of smaller ILECs in Iowa may make

implementation of TBNP more time-consuming; this is an issue to be investigated in this docket.

A third consideration with TBNP is the availability of unused blocks of 1,000 telephone numbers for contribution to the pool. This should not be a problem for the 515 area code, as it is currently undergoing a split that should produce plenty of clean blocks on both sides of the split. However, in order to maximize the potential for future TBNP in all area codes in Iowa, the Board will ask that all telephone companies use sequential telephone number assignment and preserve uncontaminated thousands blocks to the best of their ability. In order to establish a base line for measuring the effectiveness of this request, the Board will direct staff to begin this investigation with a survey of all telephone companies regarding their existing telephone number usage, assignment practices, and other, related issues.

2. Rate center consolidation

Rate center consolidation may be the most important telephone number efficiency method available to Iowa. Whenever a LEC enters a market, it must obtain at least one NXX code for every rate center in that market. In the existing 515 area code, for example, there are 329 rate centers. A new CLEC (or combination of CLECs) seeking to reach all possible customers in this area code would require a block of numbers in each of these rate centers, or 329 NXX codes. That is 3.29 million telephone numbers, or more than one-third of an entire area code, regardless of the number of customers actually served by that CLEC. If the

number of rate centers is reduced, the number of NXX codes required for competitive entry is reduced accordingly. It appears rate center consolidation may be the most promising measure available to the Board to extend the life of the recent round of area code relief proceedings.

Rate center consolidation involves issues of lost toll revenues, implementation costs, and the time required to consolidate different rate centers under different plans. Lost toll revenues may justify increases in local rates, which may in turn require rate cases or price plan adjustments for LECs subject to rate regulation, although the precise extent of lost toll revenues has not been determined. For example, it may be that LEC intraLATA toll revenues are already decreasing as a result of increased competition from interexchange carriers and wireless carriers, a factor that could affect the level of any potential increases in local rates.

The implementation costs associated with rate center consolidation are not yet known, but it appears likely they will vary depending upon the degree of consolidation.

The time required to implement rate center consolidation can be significant. In other states, major consolidation proceedings have been pending for more than a year without establishing a final implementation schedule, which may require an additional year or more. In Massachusetts, for example, two alternative plans are being examined. The first is a regional consolidation plan, grouping 202 rate

centers in eastern Massachusetts into 25 larger rate centers; the second is a single rate center plan, combining all 202 into one. The Massachusetts commission began its investigation in 1998; as of April 25, 2000, hearings and technical sessions had been held but no implementation schedule had been set[6].

The New York Public Service Commission is also investigating large rate center consolidation in Case No. 98-C-0689. The case was started in 1998; on December 2, 1999, the Commission issued an order directing all LECs to implement "wide area rate centers" throughout the state, effective February 1, 2000. (It appears these may be similar to the LATA-wide rate centers urged by Consumer Advocate in Docket No. SPU-99-30.) The telecommunications industry protested, and on December 10, 1999, the New York commission suspended implementation of rate center consolidation pending the outcome of industry working group examination of the operational and financial issues. In the resulting report[7],

> There was wide disagreement on revenue impact issues. It was clearly evident that lack of interconnection agreements among non-contiguous local exchange carriers (i.e., the smaller independents and the CLECs that most likely would employ wide area rate centers) is an impediment to implementation of wide area rate centers. Both of these major issue areas would need resolution before wide area rate centers could be effectively deployed.

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[6] Petition of Lockheed Martin IMS for Area Code Relief for the 508, 617, 781, and 978 Area Codes in Eastern Massachusetts, Mass. Dept. of Telecomm. And Energy, Docket No. D.T.E. 99-11, et al.

[7] "Order Instituting State-Wide Number Pooling And Number Assignment And Reclamation Procedures," New York Public Service Commission Case 98-C-0698, pp. 3-4 (issued March 17, 2000).

As a result, the New York commission is deferring action on rate center consolidation while pursuing TBNP.

The Board will direct its staff to investigate the costs and benefits associated with varying degrees of rate center consolidation in all parts of Iowa through industry workshops and one or more staff reports. The staff reports should include proposals regarding the appropriate resolution of each of the various issues associated with rate center consolidation, if possible.

3. Central office code sharing

Central office code sharing is a method of improving number utilization when LNP is not available, using traditional switching capabilities. It allows the sharing of numbers in a single NXX between two or more switching entities. Code sharing has been used by single local exchange carriers with multiple switches in a single metropolitan area, but the Board is not aware of any use between switches belonging to different service providers. This may prove an attractive alternative to TBNP in the 515 area code if large numbers of rural ILECs have not yet implemented LNP, and may also be useful in the 319 and 712 area codes, where the Board does not yet have TBNP authority.

Central office code sharing has been used when certain digital customer services, such as Centrex, are provided in a rate center with an analog switch through the use of a relatively small remote switching unit (RSU), which is hosted by a larger digital switch located in a different wire center or rate center. The RSU

may not provide sufficient line capacity to justify the assignment of a full NXX. Instead, blocks of numbers from an NXX assigned to the analog switch located in the same rate center are assigned to the RSU. These blocks may be full blocks of 1,000 telephone numbers, such that 8,000 numbers from an NXX are assigned to the customers served from the analog switch and the remaining 2,000 numbers serve customers on the RSU. These code-sharing arrangements are reflected in the Local Exchange Routing Guide (LERG).

Code sharing may be useful to avoid assignment of entire NXXs in situations where only a few thousand numbers are required but TBNP is not available. However, because the method uses traditional switching technologies (rather than the data base query methods of TBNP), the impacts on switch software can be significant. Generally speaking, it appears code sharing will be subject to some of the same rate center limitations as TBNP, and those limitations may be even more restrictive in some applications. It may be beneficial to convert code-sharing applications to pooling methods when pooling is available, and if a given area is expected to implement LNP in the near future, code sharing may not be worth the cost.

The Board will direct its staff to investigate code sharing as an alternative for any ILECs that have not yet implemented LNP, through the industry workshops and staff reports.

4. Individual telephone number pooling

Individual telephone number pooling (ITN), as currently envisioned, would involve transfer of unused telephone numbers to a pool that would be administered by a neutral third party. ITN would utilize the same basic technology as TBNP and would be subject to some of the same limitations (i.e., only available where LNP is implemented and numbers would still have to be used within the same rate center). However, instead of assigning blocks of one thousand numbers to each carrier upon request, carriers would receive only the numbers they actually need at any given time. During national review of this alternative, it was estimated that it would take four to six years from the date of a regulatory order to implement ITN at the rate center level. Implementing ITN on a broader basis might take longer.

At this time, the Board will not conduct a state-level investigation of ITN pooling. Instead, the Board will continue to monitor and participate in national discussions regarding this alternative, reserving the option of a state-level study if and when appropriate.

5. Unassigned number porting

Unassigned number porting (UNP) is a telephone number sharing method in which available telephone numbers in one service provider's inventory are ported (using Location Routing Number methodology) to another service provider. A neutral third-party coordinator would coordinate this process. UNP differs from ITN pooling because the telephone numbers are not donated to a pool but are instead

ported directly from one service provider to another. As a result, the third-party coordinator's role is diminished and the interaction among service providers is increased. It appears this alternative has not been the subject of any detailed studies at the national level, so it is not possible to provide any reliable estimate of the time or costs associated with implementation of this alternative.

At this time, the Board will not investigate this option at the state level, but instead will continue to monitor and participate in any national discussions on this issue. This does not preclude further study at the state level, if and when appropriate.

6. Elimination of reliance on ILEC rate centers

Existing rate center configurations appear to be a primary factor in restricting the efficient use of telephone numbers. Rate centers are products of the original wireline local exchange and toll networks. Each NXX is assigned to a specific rate center for the purpose of differentiating between local calls and toll calls and for the purpose of rating toll calls.

In order to successfully consider expanding number pooling to an area larger than the rate center, it may be necessary to eliminate some of the telecommunications network's dependence upon existing rate centers. This may not require the elimination of rate centers altogether. Instead, it may be an initial step to allow the market to depart from existing ILEC rate centers, by permitting CLECs to develop their own local calling areas as variations of the ILEC rate

center, for example. However, there are many significant issues to resolve before CLECs are permitted to totally abandon the ILEC exchange boundaries, including potential consumer confusion from varying “free” calling areas and network rating and routing problems.

Elimination of dependence on existing rate centers may also involve extensive changes in the rating and routing systems of all carriers. Today, the network relies on the fact that a specific NPA-NXX corresponds to a specific geographic point. If this system is changed, then something must replace it to permit successful routing of calls. Some of the available options are being investigated at the national level, and the Board will continue to monitor those investigations while preserving the option of a more formal investigation at a future date, if appropriate.

ORDERING CLAUSES

IT IS THEREFORE ORDERED:

1. The Board hereby initiates an inquiry into possible changes to the existing telephone network in the interest of more efficient assignment of telephone numbers to telecommunications service providers. The inquiry will be conducted by Board staff members and will be identified as Docket No. NOI-00-3. Participation by a broad range of interested persons is encouraged.

2. Board staff is directed to send written requests for information to affected telecommunications service providers, to be answered (or objected to) within

30 days of the date they are sent. The scope of the information requests should include, but need not be limited to, the providers' existing telephone number usage, assignment practices, and other related issues.

3. Board staff will establish and notify participants of the electronic filling procedures to be used in this inquiry.

4. Board staff is further directed to conduct industry workshops, if necessary or appropriate, and to prepare one or more reports for the Board describing the costs and benefits of various measures to promote more efficient use of telephone numbering resources, all as described in the body of this order.

UTILITIES BOARD

/s/ Allan T. Thoms

/s/ Susan J. Frye

ATTEST:

/s/ Raymond K. Vawter, Jr. /s/ Diane Munns
Executive Secretary

Dated at Des Moines, Iowa, this 11th day of October, 2000.